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The primary objective of this study is to develop a systems-oriented analytical framework with which to better understand how formal policies serve as regulatory influences on knowledge production and utilization (KPU) in education. When completed, the framework being developed should be able to organize information about the KPU system and its governance, which is expressed in four different modes. These modes are: (a) typological--using a classificatory system for policies, agents, resources, and goal-specified activities in KPU; (b) graphical--organizational charts, time-based flowcharts, and other types of KPU systems maps; (c) numerical--time-series and other types of quantitative or statistical information about KPU; and (d) textual--nonquantitative descriptions about the KPU system in education. In subsequent applications of the approach, the framework could be used to describe and analyze the ways in which existing configurations of policies, agents, and resources interact and coact across time in various KPU activities, thereby providing a better understanding of acutal KPU system operation and how it might be improved. (Author/PB)

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THE NORMATIVE STRUCTURE OF KNOWLEDGE PRODUCTION AND UTILIZATION IN EDUCATION: A REPORT ON WORK IN PROGRESS*

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ABSTRACT

The primary objective of this study is to develop a systems-oriented analytical framework with which to better understand how formal policies serve as regulatory influences on knowledge production and utilization (KPU) in education.

When completed, the framework being developed should be able to organize information about the KPU system and its governance that is expressed in four different modes:

- typological (using a classificatory system for policies, agents, resources, and goal-specified activities in KPU)
- graphical (organizational charts, time-based flow charts, and other types of KPU systems maps)
- numerical (time-series and other types of quantitative or statistical information about KPU)
- textual (non-quantitative descriptions about the KPU system in education)

In subsequent applications of the approach, the framework could be used to describe and analyze the ways in which existing configurations of policies, agents, and resources interact and coact across time in various KPU activities, thereby providing a better understanding of actual KPU system operation and how it might be improved.

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*A written version of comments made at the Annual Meeting of the American Educational Research Association, Symposium on Research on Knowledge Production and Utilization in Education, Washington, D.C., April 13, 1975.

Study Objectives and Limitations of Scope

In support of the National Institute of Education's mission to help build "an effective education R&D system" in the United States, Stanford Research Institute is under contract to study the "normative structure" of knowledge production and utilization in education. Although a wide variety of norms, rules, laws, and regulations constitute the normative structure of KPU in education, this study focuses only on formal public policies.

A primary objective of the study is to develop and provisionally test an analytical framework which can be used to effectively organize the collection and retrieval of information necessary to better understand the normative structure of KPU in education. The analytical framework is not meant to stand by itself, however, but is conceived to be a component part of a somewhat general approach to policy analysis. To the extent feasible, it is based on general systems concepts, and (if it proves as successful as hoped) would greatly expand the range of analytical tools available to the policy analyst.

This study is just one of a number of exploratory "predesign" studies being supported by NIE with an ultimate objective of establishing a monitoring program with a capacity for studying educational change in the United States. Hence, a secondary objective of the study is to make recommendations for further work that NIE might undertake.

Description of the Analytic Framework

The analytical framework can perhaps be best described by considering the several conceptual and developmental stages or levels necessarily treated before it is operationally useful. At the level of primitive or apriori assumptions, we chose the following four entities as basic KPU system elements: policies, agents, resources, and goal-oriented activities. Each of these is defined by the Glossary in Box 1. At the level of basic conception regarding the governance process in KPU,

Agent: A legally responsible entity is one or more persons concerned with any phase of the KPU system, including individuals, teams of persons, institutions, and communities that act in a relatively unitary fashion. The terms agency and actor will also be used where convenient to distinguish the institution from the institution's representative person.

Goal Oriented Activity: Activity evaluated against and modified to serve some intent.

Policy: Directives that are codified and have a legal basis. Examples include statutory law, codes of ethics, certification evaluation and planning requirements, formal incentives, and budgetary priorities. Excluded from this subset are informal norms, unwritten procedural conventions, or the observed behavior patterns of regulatory agents.

Resources: Matter/Energy or information needed to engage in a particular activity.

box 1

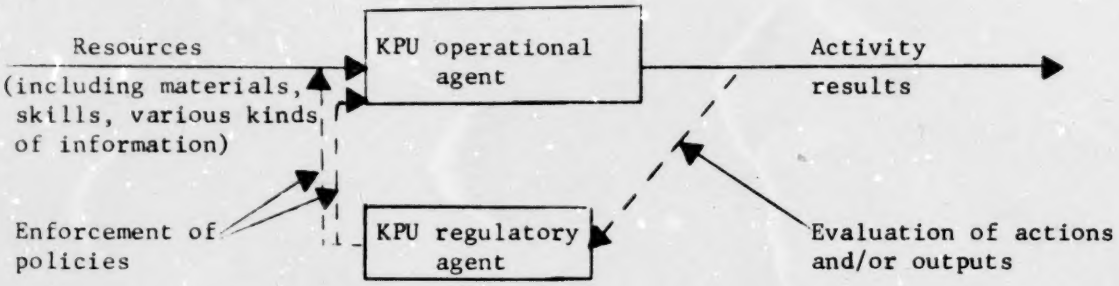
A Glossary Defining the Basic Elements of the Analytic Framework

we found two conceptualizations to be useful in different ways. The traditional cybernetic model shown Figure 1(a) is a theoretically useful conception that helped in the choice of basic system elements, but it turned out not to be very useful as a way to structure systematic descriptions of actual KPU system governance. Because of the legal/bureaucratic orientation of KPU governance, we find the legalistic conception diagrammed in simplified form on Figure 1(b) more useful. It leads the analyst to partition KPU-related activities according to the level of governance at which they exist: policy setting, policy enforcing, or policy complying.

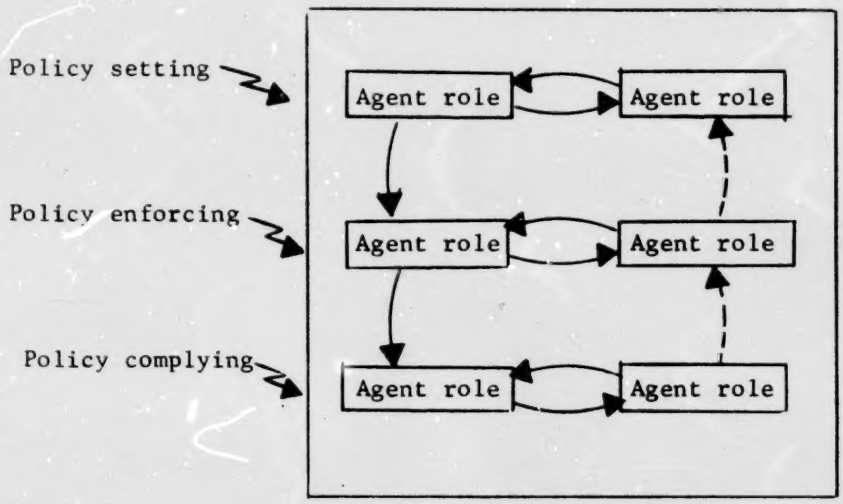
A complication of this approach is that a given action by an agent is often a "policy complying" activity as seen from the vantage point of one policy, and simultaneously a "policy enforcing" action as seen from a different policy. Such complications are numerous when trying to build a general approach for systematically describing a domain as complex and varied as is KPU, however, and must be incorporated into the framework if it is to be useful.

At the heart of the analytical framework is a descriptive typology for organizing information about policies and other aspects of KPU governance. Summarized on Table 1, it is based on the above conceptions.

Given the large number of different policies, agents, resources, and activities that characterize KPU, actual use of the framework requires an analytical objective more specific than "understanding KPU governance." Table 2 lists a variety of potential applications that are being considered in the development of the framework. An important property of the framework should be its ability to help the analyst highlight only those types of information that are important in a given application. Thus, several different approaches to "mapping" the system are necessary, the one to be used in a given application



(a) A cybernetic conception of KPU governance



(b) A legalistic conception of EKPU governance (for simplicity resources and evaluation not shown)

Figure 1

Two Abstract Conceptions of the Basic KPU Governance Process for Some Given Goal-Specified Activity

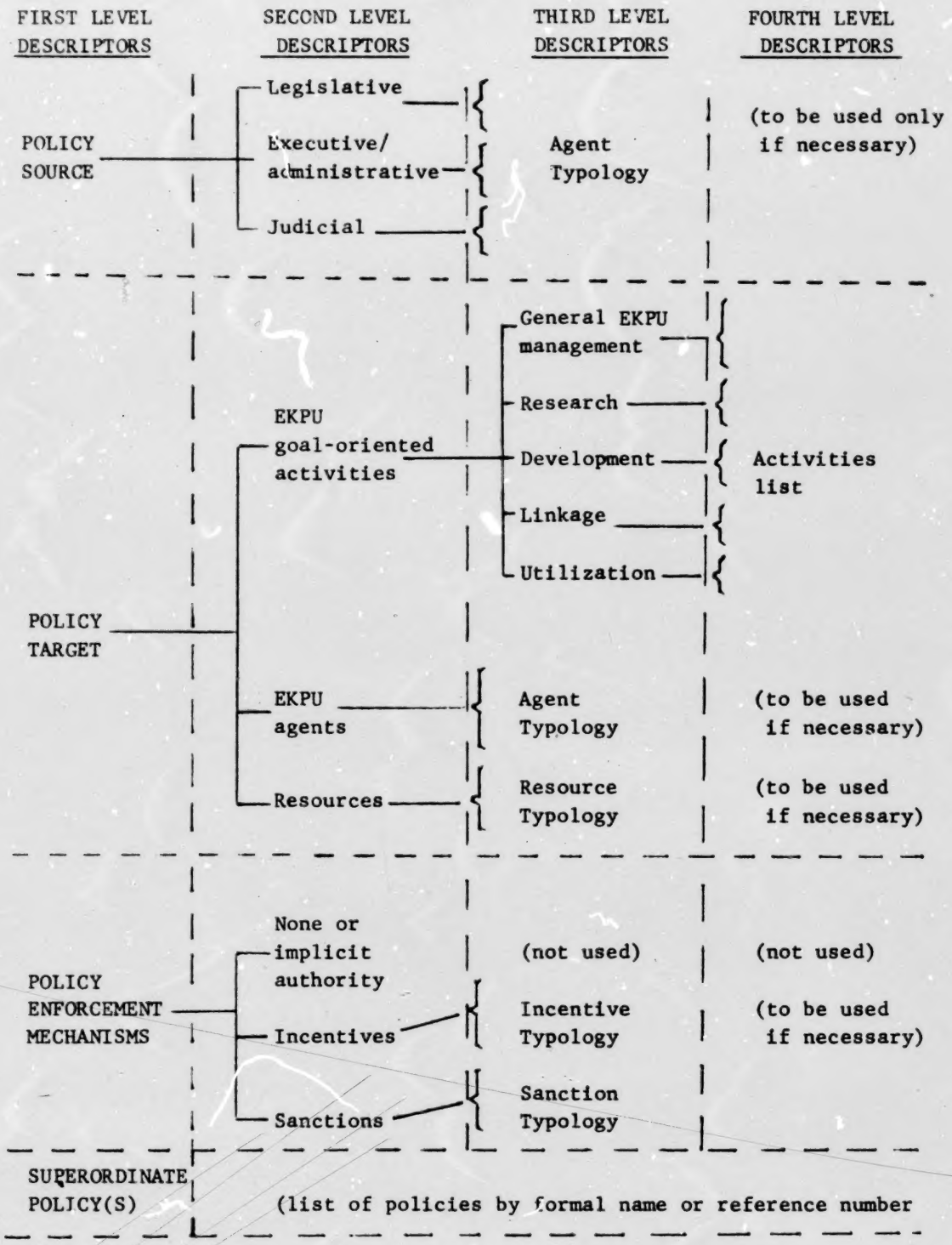


Table-1 POLICY TAXONOMY/INFORMATION SYSTEM

TABLE 2

A Listing of Potential Applications of the Analytical Framework

1. Understanding the coverage and possible impacts of a given policy.

   1.1 Agent/activity identification: listing all agents or activities having enforcement or compliance responsibility under a given policy.

   1.2 Agent/ activity impact assessment: listing other responsibilities and concerns carried by the agents or activities in 1.1, and estimating the impact of the target policy on the life of one or more of these agents/activities.

2. Understanding the array of significant policies a given agent or activity is responsible to enforce or comply with.

   2.1 Policy identification: listing all significant policies a given agent or activity is responsible to enforce or comply with.

   2.2 Agent/activity impact assessment: analysis of the effects on a given agent or activity of the entire spectrum of policies acting on it.

3. Understanding the governance of a given KPU activity.

   3.1 Activity analysis: breaking the activity into its constituent stages and elements (policies, agents, and resources), and showing how the elements interact as the activity is performed.

   3.2 Activity coordination: identifying the policies and activities that serve to coordinate the target activity with other activities in service of larger KPU goals.

   3.3 Policy/activity design: on the basis of existing knowledge, assessing each stage of a proposed policy/activity in terms of requirements for proper functioning.

4. Listing of all significant policies and impacted agents/activities in KPU.

   4.1 Policy information system: using the analytic framework, structure an information system, with policy/agent/activity cross-referencing.

depending on what the analyst wants the particular analysis to accomplish. If, for example, one is primarily interested in what agents or activities are subject to a given policy (e.g., freedom of information law) the approach must be policy-centered, as symbolized in Figures 2a and 2c. Here one would seek to identify all of the agents who have defined responsibilities and to set/reset, or enforce and/or to comply with the given policy.

If one is primarily interested in knowing what policies a given agent (e.g., NIE or a researcher) is responsible to enforce or comply with, the approach must be agent-centered, as symbolized in Figures 2b and 2d. Here one would seek to identify the requirements set by the most significant policies acting on that agent, and possibly the sources of the policy and its mechanisms of enforcement as well. (Generally there are so many policies that the identification of all of them in any particular situation is unfeasible.)

If, on the other hand, one wanted to know <u>how</u> a given policy acts on and in the EKPU system, or <u>how</u> a given agent or activity functions in relation to the relevant policies, a still more complex approach is needed. Although we have not yet conclusively demonstrated this to be the case, our experience to date indicates that an understanding of how policies actually work in the system can only be achieved by using analytical procedures that show how groupings of policies, agents and resources interact and coact across time (through the various stages in the life of a given policy or activity).

Figure 3 portrays a recursive series of steps through which this more demanding type of analysis can be done. One first (level I) identifies the policy or activity to be focused upon (including a specification of the primary purpose of the policy or activity). One next (in level II) defines the scope of the inquiry, in part by making a provisional decision as to the degree to which the policy or activity should be broken down into its constituent elements, and then proceeds

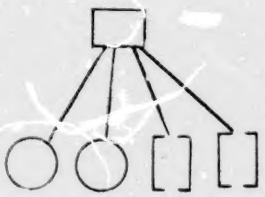
POLICY-CENTERED

AGENT/ACTIVITY-CENTERED

SIMPLEX TREATMENT

COMPLEX TREATMENT

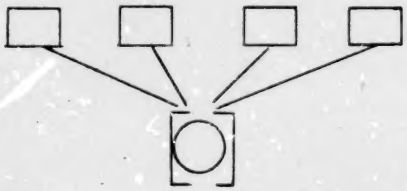
A Given Policy



All agents or activities covered by policy

(a)

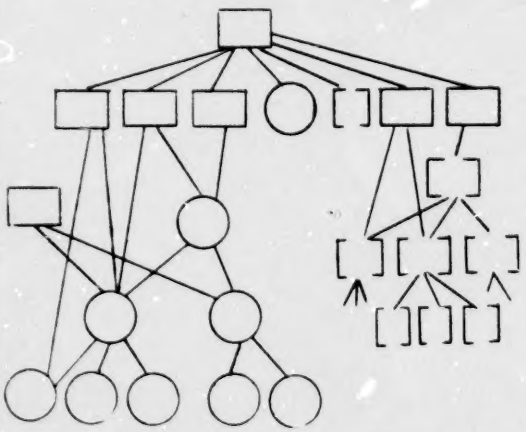
All policies covering that agent or activity



A given agent/activity

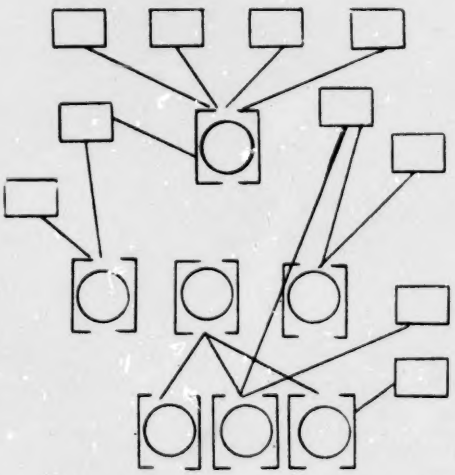
(b)

A given policy, broken out by parts



All agents or activities but broken out by level of aggregation and stage of activity

All policies covering various aspects or stages in the functioning of the agent or activity



A given agent/activity, but broken out by level of aggregation/stage of activity

Symbols Used:

Policy — □

Agent (agency or actor)— o

Activity— [ ]

figure 2

Four Different Conceptual Orientations with which the Analytic Framework Can Be Used (Note: KPU Resources Could similarly be considered.)

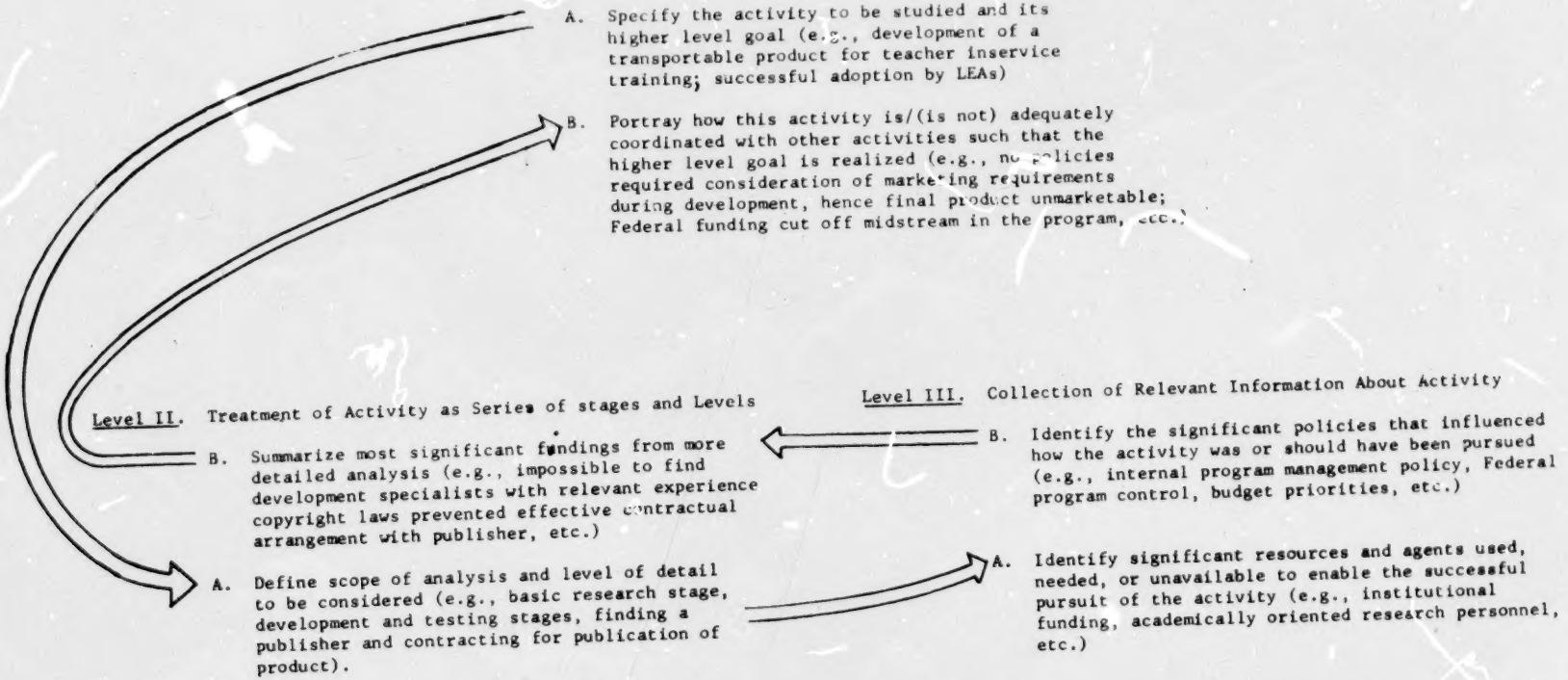

Level I. Treatment of a Goal-Oriented Activity as a Whole Entity
A. Specify the activity to be studied and its higher level goal (e.g., development of a transportable product for teacher inservice training; successful adoption by LEAs)
B. Portray how this activity is/(is not) adequately coordinated with other activities such that the higher level goal is realized (e.g., no policies required consideration of marketing requirements during development, hence final product unmarketable; Federal funding cut off midstream in the program, etc.)
Level II. Treatment of Activity as Series of stages and Levels
B. Summarize most significant findings from more detailed analysis (e.g., impossible to find development specialists with relevant experience copyright laws prevented effective contractual arrangement with publisher, etc.)
A. Define scope of analysis and level of detail to be considered (e.g., basic research stage, development and testing stages, finding a publisher and contracting for publication of product).
Level III. Collection of Relevant Information About Activity
B. Identify the significant policies that influenced how the activity was or should have been pursued (e.g., internal program management policy, Federal program control, budget priorities, etc.)
A. Identify significant resources and agents used, needed, or unavailable to enable the successful pursuit of the activity (e.g., institutional funding, academically oriented research personnel, etc.)

figure 3

An (Agent-Policy-Resource) Interactive Conceptual Orientation With Which the Analytic Framework can be Used. (Assumes Applications 3.1 and 3.2 listed on Table 2)

to describe each detailed part. Once the target policy or activity is sufficiently detailed, necessary information is collected (in level III) to identify how the significant policies, agents, and resources interact in each part of the activity that was detailed in level II. One then returns to level II, refining the partitioning of the policy or activity as may now appear appropriate and summarizing the detailed findings, and then the analysis returns to level I where the policies and activities that relate to coordination with other policies and activities are highlighted.

Assessment of the Framework

In order to assess the adequacy of the analytic framework for various applications, information is being collected on the following areas:

- ESEA Title III Teacher Initiated Innovation Program
- Organizational Mechanisms for the Improvement of Practice
- Evaluation and Selection of Curriculum
- Linkage Agents
- Dissemination/Utilization of SMSG Math
- Development/Dissemination/Utilization of Minicourses
- R&D Performers
- Policies that Protect Information
- Competitive Procurement Policy
- NIE Allocation Policy

Each of these case studies is being pursued in a way that emphasizes one of the various orientations described on Figures 2 and 3, and various levels of effort are being used so as to be able to make a provisional assessment of the relative power of the framework when applied in various ways. Although some substantive insights are hoped for as a result of this effort, the purpose of the study is more to develop and test the framework than to produce definitive findings.

The final results of the study are scheduled to be reported by October 1975.